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COMMISSIONER

CERTIFICATION FOR TRANSLATION

As a below named translator, I hereby declare that my residence and citizenship are as stated below next to my name and I hereby certify that I am conversant with both the English and Korean languages and the document enclosed herewith is a true English translation of Priority Document, with respect to KPA No 2003-0023723, which the translation is accurate.

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CITIZENSHIP : REPUBLIC OF KOREA

[ABSTRACT OF THE DISCLOSURE]

[ABSTRACT]

In a mobile terminal provided with a rotating key having five dome switches on one side thereof which can detect a contact signal when pressed by a user and a plurality of contact surfaces on the other side which can detect the position of the rotating key in each direction of rotation, a method for using the rotating key comprising the steps of: detecting if the rotating key is turned or a dome switch is pressed in a menu selection mode; when the rotating key is turned, selecting a menu according to the direction of rotation; and when a dome switch is pressed, selecting a menu according to the pressed dome switch.

[REPRESENTATIVE FIGURE]

FIGURE 5

[INDEX]

ROTATION KEY, selection mode, zoom function, brightness control function

[SPECIFICATION]

[TITLE OF THE INVENTION]

METHOD FOR USING ROTATING KEY ON MOBILE TERMINAL

[BRIEF DESCRIPTION OF THE DRAWINGS]

FIG. 1 is a view showing the structure of a mobile terminal according to the present invention;

FIGs. 2a to 2e are views for explaining the structure of the rotating key in FIG. 1;

FIG. 3 is a view showing a mobile terminal having the rotating key in FIG. 2;

FIGs. 4a and 4b are flow charts showing a process of selecting a menu in a mobile terminal according to a first embodiment of the present invention;

FIG. 5 is a flow chart showing a process of controlling an image signal in a mobile terminal according to a second embodiment of the present invention; and

FIG. 6 is a flow chart showing a process of controlling a moving picture in a mobile terminal according to a third embodiment of the present invention.

[DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT]

[OBJECT OF THE INVENTION]

[RELATED FIELD AND PRIOR ART OF THE INVENTION]

The present invention relates to a method for using a rotating key provided on a mobile terminal, and more particularly to a method for rapidly selecting a menu and an operation mode function using a rotating key provided on a mobile terminal.

Generally, a mobile terminal has a keypad with a plurality of keys used for inputting data, which include a send (SND) key, a cancel key, a clear (CLR)

key, number/character keys, an end (END) key, function keys and a power (PWR) key. Such keys are arrayed in a proper number of 15 to 20 and exposed on the front side of a main housing of the mobile terminal to enable a user to input or select desired data by pressing of keys.

However, it is not easy for the user to find and press proper keys to select and implement an operation mode function from a variety of menus. Also, the user has to rapidly move his or her fingers onto the keys to be pressed when trying to rapidly changing functions of the mobile terminal. Since it is difficult to rapidly select an operation mode function from a variety of menus, fast mobile Internet access cannot be achieved.

[TECHNICAL OBJECT TO BE ACHIEVED BY THE INVENTION]

Accordingly, the present invention has been made to solve the above-mentioned problems occurring in the prior art, and an object of the present invention is to provide a method for rapidly selecting a menu and an operation mode function using a rotating key provided on a mobile terminal.

In accordance with one aspect of the present invention for accomplishing the above object, there is provided a method for using a rotating key provided on a mobile terminal, said rotating key having a plurality of dome switches on one side thereof which can detect a contact signal when pressed by a user and a plurality of contact surfaces on the other side which can detect the position of the rotating key in each direction of rotation, said method comprising the steps of: detecting if the rotating key is turned or a dome switch is pressed in a menu selection mode; when the rotating key is turned, selecting a menu according to the direction of rotation; and when a dome switch is pressed, selecting a menu according to the pressed dome switch.

In accordance with another aspect of the present invention, there is provided a method for using a rotating key provided on a mobile terminal with a built-in camera, said rotating key having a plurality of dome switches on one side thereof which can detect a contact signal when pressed by a user and a plurality of contact surfaces on the other side which can detect the position of the rotating key in each direction of rotation, said method comprising the steps of: when a zoom function is selected in a camera mode, zooming in or out according to the direction and speed of rotation of the rotating key; and when a brightness control function is selected in the camera mode, controlling the brightness of a picture according to the direction and speed of rotation of the rotating key.

In accordance with still another aspect of the present invention, there is a provided a method for using a rotating key provided on a mobile terminal, said rotating key having a plurality of dome switches on one side thereof which can detect a contact signal when pressed by a user and a plurality of contact surfaces on the other side which can detect the position of the rotating key in each direction of rotation, said method comprising the steps of: detecting the direction and speed of rotation of the rotating key to reproduce a moving picture; when the rotating key is turned clockwise, reproducing the moving picture according to the turning speed in a predetermined direction corresponding to the clockwise turning; and when the rotating key is turned counterclockwise, reproducing the moving picture according to the turning speed in a predetermined direction corresponding to the counterclockwise turning.

In accordance with still another aspect of the present invention, there is provided a method for using a rotating key provided on a mobile terminal with a built-in TV receiver, said rotating key having a plurality of dome switches on one side thereof which can detect a contact signal when pressed by a user and a plurality of contact surfaces on the other side which can detect the position of the rotating key in each direction of rotation, said method comprising the steps of:

detecting the direction of rotation of the rotating key to select a channel in a television mode; and displaying video signals broadcasted on a channel selected according to the direction of rotation of the rotating key.

[CONSTRUCTION OF THE INVENTION]

Hereinafter, preferred embodiments of the present invention will be described with reference to the accompanying drawings. In the drawings, the same element, although depicted in different drawings, will be designated by the same reference numeral or character.

Although certain menus or functions selected according to the direction and speed of rotation of the rotating key are specifically defined in the following description, it will be obvious to those skilled in the art that such definitions are merely to improve understanding of the present invention and that the present invention can be carried out with various modifications.

In the following description of the preferred embodiments of the invention, a mobile terminal equipped with a camera will be explained. However, the present invention is equally applicable to all general mobile terminals having no built-in camera or equipped with a TV receiver.

FIG. 1 is a block diagram showing the structure of a mobile terminal equipped with a camera according to the present invention.

Referring to FIG. 1, an RF section 123 performs a wireless communication function of a mobile terminal. The RF section 123 comprises a RF transmitter for performing upward conversion and amplification of the frequency of a signal, which is being transmitted, and an RF receiver for amplifying a signal, which is being received, with low noise and performing

downward conversion of the frequency of the signal. A data processing section 120 comprises a transmitter for coding and modulating a signal which is being transmitted and a receiver for demodulating and decoding a signal which is being received. The data processing section 120 may be composed of a modem and a codec. The codec comprises a data codec for processing packet data and an audio codec for processing an audio signal such as a speech signal. An audio processing section 125 reproduces an audio signal outputted from the audio codec of the data processing section 120 or transmits an audio signal generated from a microphone to the audio codec of the data processing section 120.

A memory 130 may be composed of a program memory and a data memory. The program memory includes programs for controlling general operations of the mobile terminal and those for selecting functions or controlling image data according to the direction of rotation of the rotating key in the preferred embodiments of the present invention. The data memory temporarily stores data generated during implementation of the above programs.

A control section 110 controls the overall operations of the mobile terminal. The control section 110 may include the data processing section 120. The control section 110 detects the direction of rotation of the rotating key 200 of the present invention and controls a cursor to move from one menu to another in a menu selection mode. Also, the control section 110 adjusts the focus on an object to be photographed according to a zoom function or a brightness control function selected in a camera mode. When reproducing a moving picture, the control section 110 detects the direction and speed of rotation of the rotating key 200 and controls a display section to display the moving picture according to the detected direction and speed of rotation.

A camera module 140 is used to take pictures of an object on which its lens focuses. The camera module 140 comprises a camera sensor for converting a photographed optical signal into an electric signal and a signal processor for converting an analog image signal photographed by the camera sensor into

digital data. Supposing that the camera sensor is a CCD (charge coupled device) sensor, the signal processor can be a DSP (digital signal processor). The camera sensor and the signal processor can be either integrated into a single element or separated as independent elements.

An image processing section 150 generates picture data for displaying an image signal outputted from the camera module 140. The image processing section 150 processes image signals outputted from the camera module 140 in frames. Also, the image processing section 150 adjusts the frame image data to conform to the features, such as size and resolution, which are displayable on the display section 160, and outputs the adjusted frame image data. The image processing section 150 comprises an image codec, and compresses the frame image data displayed on the display section 160 in a preset manner or restore the compressed frame image data to the original frame image data. The image codec is selected from a variety of still or moving picture codecs, such as JPEG codec, MPEG4 codec or Wavelet codec. The image processing section 150 has an OSD (on screen display) function. The image processing section 150 can output OSD data according to the displayed picture size under the control of the control section 110.

The display section 160 displays image data outputted from the image processing section 150 or user data outputted from the control section 110. The display section 160 can be an LCD comprising an LCD controller, a memory for storing image data and an LCD device. When the LCD is a touch screen, it can serve as an input section. A key input section 127 is provided with keys for inputting numbers and characters and function keys for setting up various functions.

The rotating key 200 can be turned clockwise or counterclockwise, thereby enabling the user to rapidly select a menu or an operation mode function.

FIG. 2a shows the rotating key 200 as explained above. FIG. 2b is a

plane view of a printed circuit board (PCB) of the rotating key, which has a plurality of contact surfaces. FIG. 2c is a cross-sectional structure of the PCB in FIG. 2b. FIG. 2d is a bottom view of the PCB having a plurality of dome switches. FIG. 2e shows a contact plate of the rotating key 200.

Referring to FIGs. 2a to 2e, the rotating key 200 includes a contact plate 220 having a contact terminal 221 and a PCB 210 for receiving an electric signal upon contact with the contact terminal 221.

The PCB 210 comprises five dome switches on one side thereof as shown in FIG. 2d to detect a contact signal when pressed by the user and a plurality of contact surfaces 201 on the other side as shown in FIG. 2a to enable the contact terminal 221 to detect the position of the rotating key in each direction of rotation.

Supposing that the plurality of contact surfaces 201 are arrayed in repeated A-B-C sequence of positions clockwise as shown in FIGs. 2b and 2c, each port of the contact surfaces 201 will be in a "high" state if not connected to the contact terminal 221. Each port will become "low" immediately when connected to the contact terminal 221. In other words, when the user turns the rotating key 200 clockwise, the contact surfaces 201 become low in the sequence of A, B, C, A, B, C, ... When the user turns the rotating key 200 counterclockwise, the contact surfaces 201 become low in the sequence of A, C, B, A, C, B, ... Thus, it is possible to detect whether the rotating key 200 is turned clockwise or counterclockwise. Each port of the contact surfaces 201 alternates between a long-term high state and a short-term low state while the rotating key 200 is turned. It is possible to know the turning speed of the rotating key 200 by measuring the cycle of such alternation. FIG. 3 is a view showing a mobile terminal provided with the rotating key apparatus.

FIGs. 4a and 4b are flow charts showing a process of selecting a menu by turning the rotating key according to the first embodiment of the present

invention. Although the above drawings show a process of selecting a menu according to the direction of rotation of the rotating key, it is possible to select a menu using the dome switches formed on the rotating key. In the first embodiment, a menu selection mode refers to a mode of displaying menus that can be selected by moving a cursor, such as an initial menu, a text message or a phone book. It is assumed that the cursor moves to upper menus in an up/down scroll display when the rotating key is turned clockwise and that the cursor moves to lower menus when the rotating key is turned counterclockwise. It is also assumed that the cursor moves to left menus in a left/right scroll display when the rotating key is turned clockwise and that the cursor moves to right menus when the rotating key is turned counterclockwise. However, it is possible to make the cursor move downward when the rotating key is turned clockwise and move upward when the rotating key is turned counterclockwise. Also, it is possible to make the cursor move right when the rotating key is turned clockwise and move left when the rotating key is turned counterclockwise.

Hereinafter, the process of selecting a menu according to the direction of rotation of the rotating key will be explained in more detail with reference to FIGs. 1 to 3.

When the user of the mobile terminal turns the rotating key 200, the control section 110 detects the direction of rotation of the rotating key 200 at step 301. If the rotating key 200 is turned clockwise, the control section 110 will detect the clockwise turning and will move the cursor according to the direction of rotation at step 302.

If the display section 160 is in the mode of the up/down scroll display, the control section 110 will detect this mode at step 303 and will move the cursor upward at step 304 to position the cursor on an upper menu. If the display section 160 is in the mode of the left/right scroll display, the control section 110 will detect this mode at step 305 and will move the cursor left at step 306 to position the cursor on a left menu. While moving the cursor at step 304 or 306,

the user can press an OK key to select a menu on which the cursor is positioned. Then, the control section 110 detects the key input at step 307 and proceeds with step 309 to perform a function corresponding to the selected menu. A dome switch 202 provided on the rotating key 200 can serve as the OK key. When sub-menus of the menu selected at step 307 are displayed on the display section 160, the control section 110 detects the display of the sub-menus at step 308 and proceeds again with steps 302 to 307 to enable the user to select a sub-menu by turning the rotating key 200.

If the user turns the rotating key 200 counterclockwise at step 301, the control section 110 will detect the counterclockwise turning and will move the cursor according to the direction of rotation at step 312.

If the display section 160 is in the mode of the up/down scroll display, the control section 110 will detect this mode at step 313 and will move the cursor downward at step 314 to position the cursor on a lower menu. If the display section 160 is in the mode of the left/right scroll display, the control section 110 will detect this mode at step 315 and will move the cursor right at step 316 to position the cursor on a right menu. While moving the cursor at step 314 or 316, the user can press the OK key to select a menu on which the cursor is positioned. The control section 110 detects the key input at step 317 and proceeds with step 319 to perform a function corresponding to the selected menu. A dome switch 202 provided on the rotating key 200 can serve as the OK key. When sub-menus of the menu selected at step 317 are displayed on the display section 160, the control section 110 detects the display of the sub-menus at step 38 and proceeds again with steps 312 to 317 to enable the user to select a sub-menu by turning the rotating key 200.

FIG. 5 is a flow chart showing a process of controlling an image signal by turning the rotating key according to the second embodiment of the present invention. Although this drawing shows a process of controlling an image signal in a camera mode by turning the rotating key, it is possible to control the

image signal using the dome switches formed on the rotating key. In the second embodiment, the camera mode refers to a mode of obtaining an image signal through the camera module and displaying the image signal on the display section. Although the rotating key used to zoom in or out or control the brightness of a picture displayed in the camera mode will be explained as the second embodiment of the present invention, it is equally applicable in any other function mode that can be controlled according to the direction and speed of rotation. It is assumed that a zoom-out function for gradually reducing the size of an image is performed in a zoom function mode when the rotating key is turned clockwise and that a zoom-in function for gradually enlarging the image is performed when the rotating key is turned counterclockwise. It is also assumed that the brightness of the picture is gradually increased in a brightness control mode when the rotating key is turned clockwise and gradually decreased when the rotating key is turned counterclockwise. However, it is possible to configure the rotating key to zoom in when turned clockwise and zoom out when turned counterclockwise. Also, it is possible to configure the rotating key to gradually increase the brightness of the picture when turned clockwise and gradually decrease the brightness of the picture when turned counterclockwise. The adjustable range of brightness varies depending on the types of mobile terminals.

Hereinafter, the process of controlling an image signal using the rotating key according to the second embodiment of the present invention will be explained in more detail with reference to FIGs. 1 to 3.

When the user selects a zoom function for an image signal obtained through the camera module 140 and displayed on the display section 160 in the camera mode at step 401, the control section 110 detects the selection of the zoom function at step 402 and changes the current mode of the mobile terminal to the zoom mode. When the user turns the rotating key 200 clockwise, the control section 110 detects the clockwise turning at step 403 and proceeds with step 404 to gradually zoom out from the image according to the turning speed. When the user turns the rotating key 200 counterclockwise, the control section

detects the counterclockwise turning at step 403 and proceeds with step 406 to gradually zoom in on the image according to the turning speed. At step 407, the control section 110 detects the completion of the zoom function performed at step 404 or 406 and determines whether the user selects any other function mode. If the user presses the camera key, the control section 110 will detect this input and will proceed with step 415 to photograph the image. If the user selects any other function, the control section 110 will detect this selection at step 414 and will perform the selected function.

If the user selects the brightness control function, the control section 110 will detect this selection at step 408 and will change the current mode of the mobile terminal to the brightness control mode. When the user turns the rotating key 200 clockwise, the control section 110 detects the clockwise turning at step 409 and gradually increases the brightness of the picture according to the turning speed at step 410. When the user turns the rotating key 200 counterclockwise, the control section110 detects the counterclockwise turning at step 411 and gradually decreases the brightness of the picture according to the turning speed at step 412. At step 413, the control section 110 detects the completion of the brightness control function performed at step 410 or 412 and determines whether the user selects any other function mode. If the user selects any other function, the control section 110 will detect the selection at step 414 and will performed the selected function. If the user presses the camera key, the control section will proceed with step 415 to photograph the image.

FIG. 6 is a flow chart showing a process of controlling a moving picture by turning the rotating key according to the third embodiment of the present invention. Although this drawing shows a process of controlling a moving picture in the camera mode according to the direction of rotation of the rotating key, it is possible to control the moving picture using the dome switches formed on the rotating key. Although the rotating key used to control a moving picture will be explained as the third embodiment of the present invention, it is equally applicable to control a still picture. In this embodiment, a moving picture is reproduced through the Internet or stored in the mobile terminal after being downloaded from the Internet or taken by a camcorder. It is assumed that a

fast-forward function is performed when the rotating key is turned clockwise and that a rewind function is performed when the rotating key is turned counterclockwise. However, it is possible to configure the rotating key to perform the rewind function when turned clockwise and the fast-forward function when turned counterclockwise.

If the user turns the rotating key 200 clockwise at step 501 of displaying a moving picture, the control section 110 will detect the clockwise turning at step 502 and will perform the fast-forward function according to the turning speed at step 503. If the rotating key 200 is turned clockwise while the moving picture is being reproduced, the control section 110 will reproduce the moving picture in fast-forward motion.

If the user turns the rotating key 200 counterclockwise at step 501, the control section 110 will detect the counterclockwise turning at step 504 and will perform the rewind function according to the turning speed at step 505. If the rotating key 200 is turned counterclockwise while the moving picture is being reproduced, the control section 110 will reproduce the moving picture in rewind motion.

The rotating key 200 as shown in FIG. 2 is also applicable to a mobile terminal equipped with a TV receiver. For example, the rotating key 200 can be used to select a channel when a TV broadcasting signal is received through the display section.

[EFFECTS OF THE INVENTION]

As the above, the rotating key provided on a mobile terminal according to the present invention enables fast selection of a menu or an operation mode function available on the mobile terminal, thereby improving user convenience.

[PATENT CLAIMS]

1. In a mobile terminal provided with a rotating key having a plurality of dome switches on one side thereof which can detect a contact signal when pressed by a user and a plurality of contact surfaces on the other side which can detect the position of the rotating key in each direction of rotation, a method for using the rotating key comprising the steps of:

detecting if the rotating key is turned or a dome switch is pressed in a menu selection mode;

when the rotating key is turned, selecting a menu according to the direction of rotation; and

when a dome switch is pressed, selecting a menu according to the pressed dome switch.

2. The method according to claim 1, wherein said step of turning the rotating key to select a menu comprises:

when the rotating key is turned clockwise, moving a cursor to menus in a predetermined direction; and

when the rotating key is turned counterclockwise, moving the cursor to menus in the opposite direction.

3. The method according to claim 2, wherein in an up/down scroll display mode, said cursor moves to upper menus when the rotating key is turned clockwise and to lower menus when the rotating key is turned counterclockwise.

4. The method according to claim 3, wherein said cursor moves to lower menus when the rotating key is turned clockwise and to upper menus when the rotating key is turned counterclockwise.

5. The method according to claim 2, wherein in a left/right scroll display mode, said cursor moves to left menus when the rotating key is turned clockwise and to right menus when the rotating key is turned counterclockwise.

6. The method according to claim 5, wherein said cursor moves to right menus when the rotating key is turned clockwise and to left menus when the rotating key is turned counterclockwise.

7. The method according to claim 1, wherein said step of pressing a dome switch to select a menu comprises:

when a left or right dome switch is pressed, moving a cursor to left or right menus; and

when an upper or lower dome switch is pressed, moving the cursor to upper or lower menus.

8. The method according to claim 1, wherein said dome switches are used as short-cut keys.

9. In a mobile terminal provided with a camera and a rotating key which has a plurality of dome switches on one side thereof to detect a contact signal when pressed by a user and a plurality of contact surfaces on the other side to detect the position of the rotating key in each direction of rotation, a method for using the rotating key comprising the steps of:

when a zoom function is selected in a camera mode, zooming in or out according to the direction and speed of rotation of the rotating key; and

when a brightness control function is selected in the camera mode, controlling the brightness of a picture according to the direction and speed of rotation of the rotating key.

10. The method according to claim 9, wherein said step of zooming in or out in the camera mode comprises:

when the rotating key is turned clockwise, zooming in or out according to the turning speed; and

when the rotating key is turned counterclockwise, zooming out or in according to the turning speed.

11. The method according to claim 9, wherein said step of controlling the brightness comprises:

when the rotating key is turned clockwise, increasing or decreasing the brightness of the picture according to the turning speed; and

when the rotating key is turned counterclockwise, decreasing or increasing the brightness of the picture according to the turning speed.

12. The method according to claim 9, wherein said dome switches are used to perform the zoom function or the brightness control function.

13. In a mobile terminal provided with a camera and a rotating key which has a plurality of dome switches on one side thereof to detect a contact signal when pressed by a user and a plurality of contact surfaces on the other side to detect the position of the rotating key in each direction of rotation, a method for using the rotating key comprising the steps of:

detecting the direction and speed of rotation of the rotating key to reproduce a moving picture;

when the rotating key is turned clockwise, reproducing the moving picture according to the turning speed in a predetermined direction corresponding to the clockwise turning; and

when the rotating key is turned counterclockwise, reproducing the moving picture according to the turning speed in a predetermined direction corresponding to the counterclockwise turning.

14. In a mobile terminal provided with a TV receiver and a rotating key which has a plurality of dome switches on one side thereof to detect a contact signal when pressed by a user and a plurality of contact surfaces on the other side to detect the position of the rotating key in each direction of rotation, a method for using the rotating key comprising the steps of:

detecting the direction of rotation of the rotating key to select a channel in a television mode; and

displaying video signals broadcasted on a channel selected according to the direction of rotation of the rotating key.

15. The method according to claim 14, wherein said dome switches are used to select a channel.

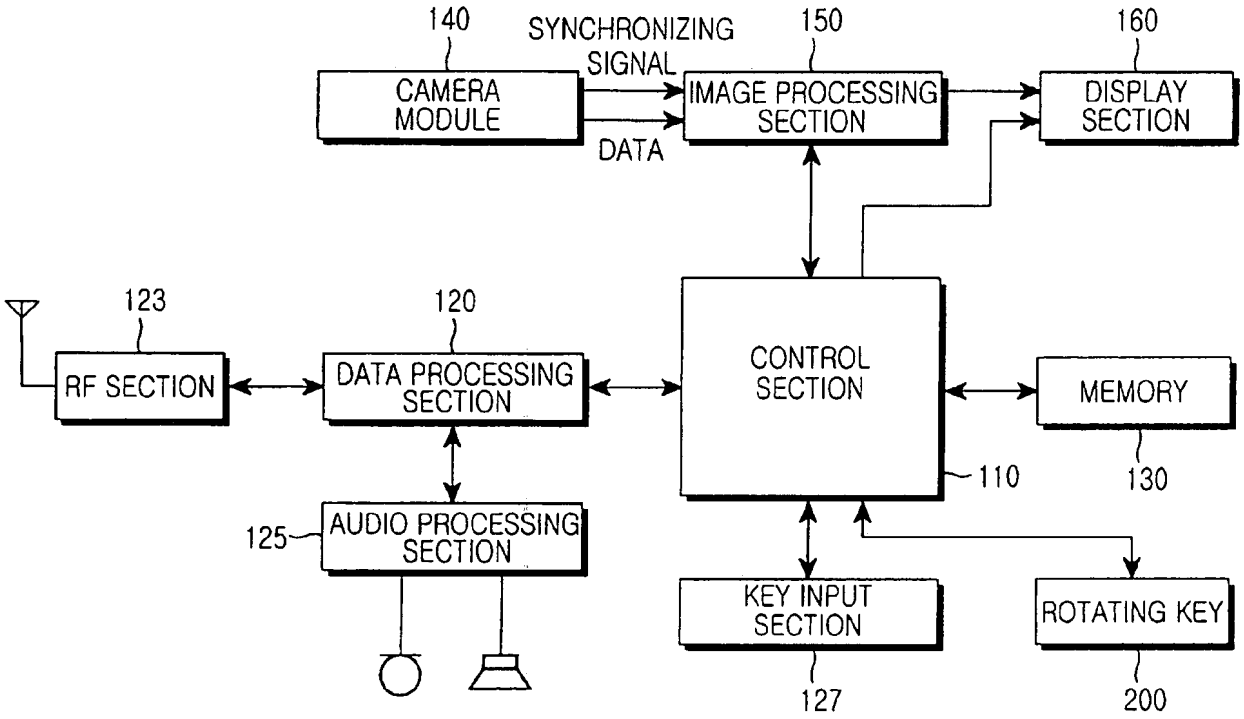
140
SYNCHRONIZING SIGNAL
150
160
CAMERA MODULE
IMAGE PROCESSING SECTION
DISPLAY SECTION
DATA
123
120
RF SECTION
DATA PROCESSING SECTION
CONTROL SECTION
MEMORY
110
130
125
AUDIO PROCESSING SECTION
KEY INPUT SECTION
ROTATING KEY
127
200

FIG.1

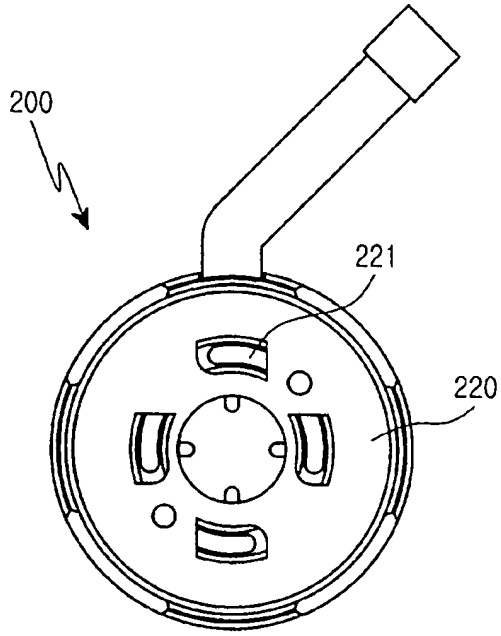

FIG.2A

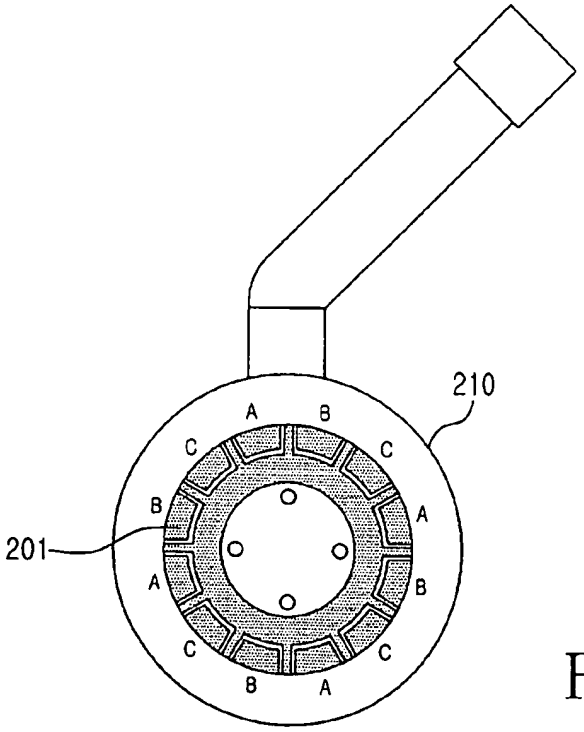

FIG.2B

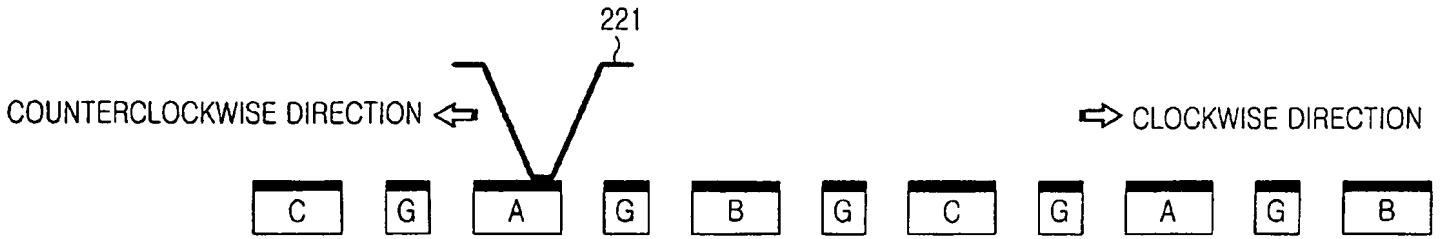
221
COUNTERCLOCKWISE DIRECTION
CLOCKWISE DIRECTION
C
G
A
G
B
G
C
G
A
G
B

FIG.2C

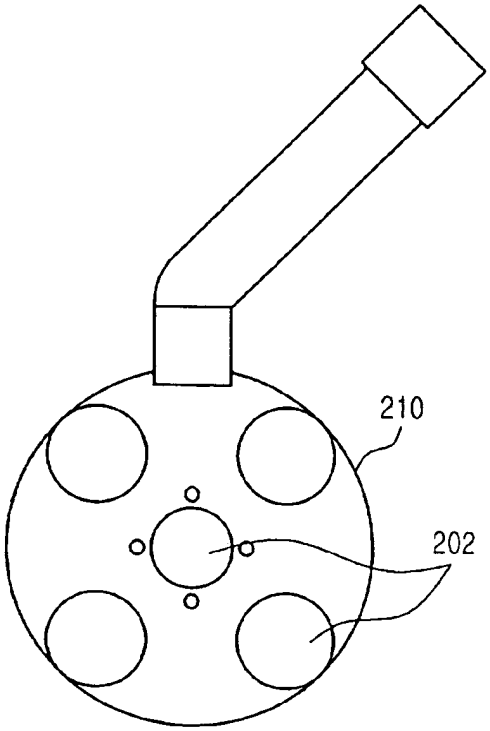

FIG.2D

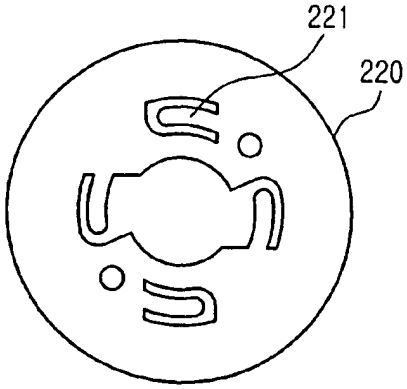

FIG.2E

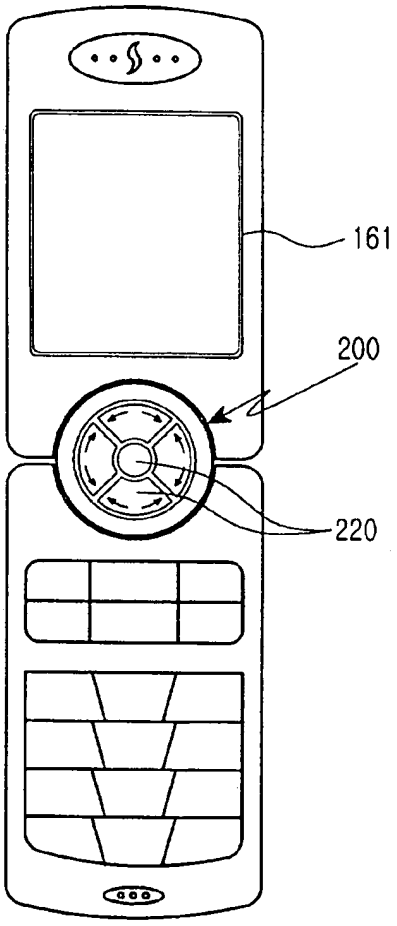

FIG.3

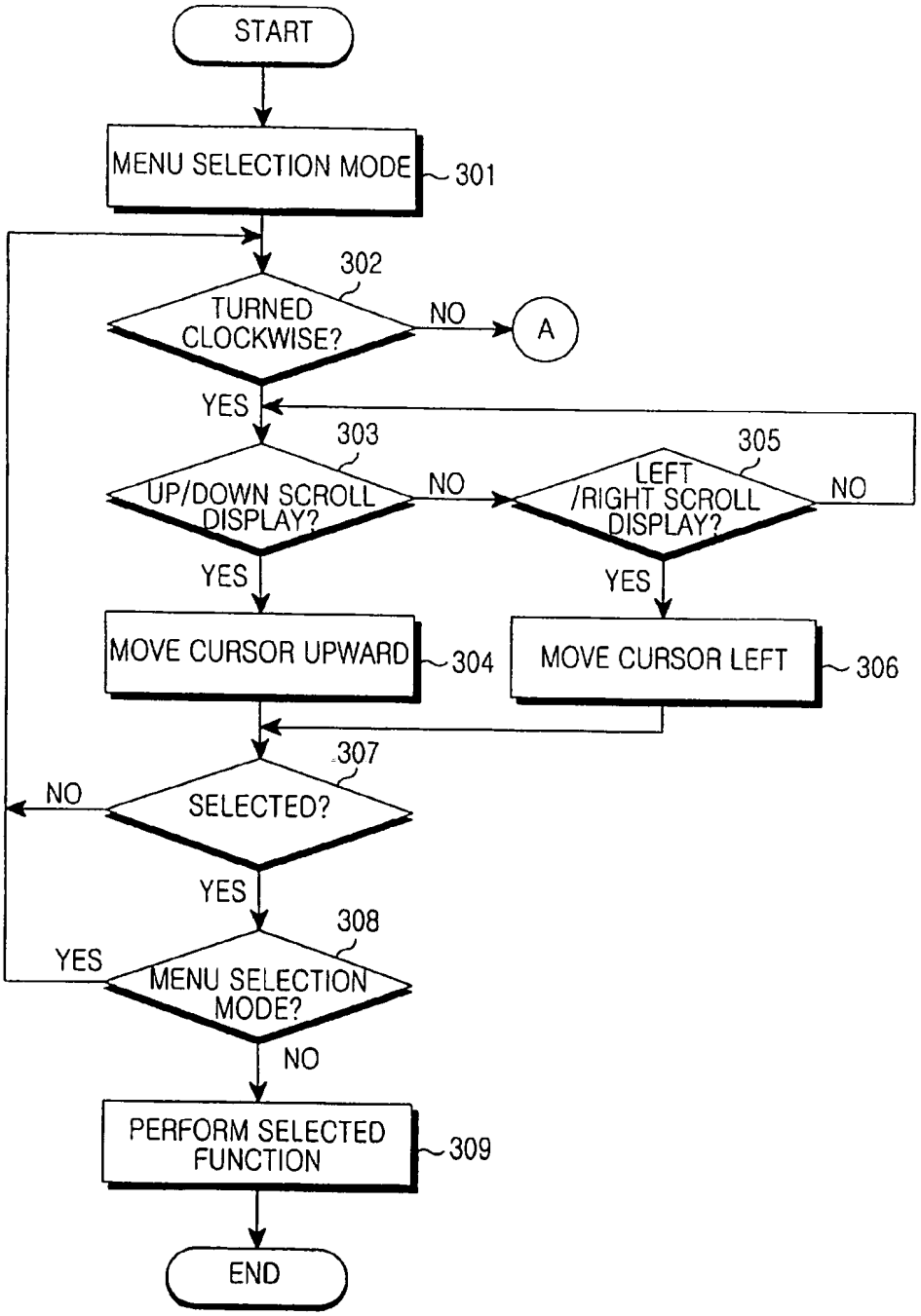
START
MENU SELECTION MODE
301
302
TURNED CLOCKWISE?
NO
A
YES
303
UP/DOWN SCROLL DISPLAY?
NO
305
LEFT /RIGHT SCROLL DISPLAY?
NO
YES
YES
MOVE CURSOR UPWARD
304
MOVE CURSOR LEFT
306
307
NO
SELECTED?
YES
308
YES
MENU SELECTION MODE?
NO
PERFORM SELECTED FUNCTION
309
END

FIG.4

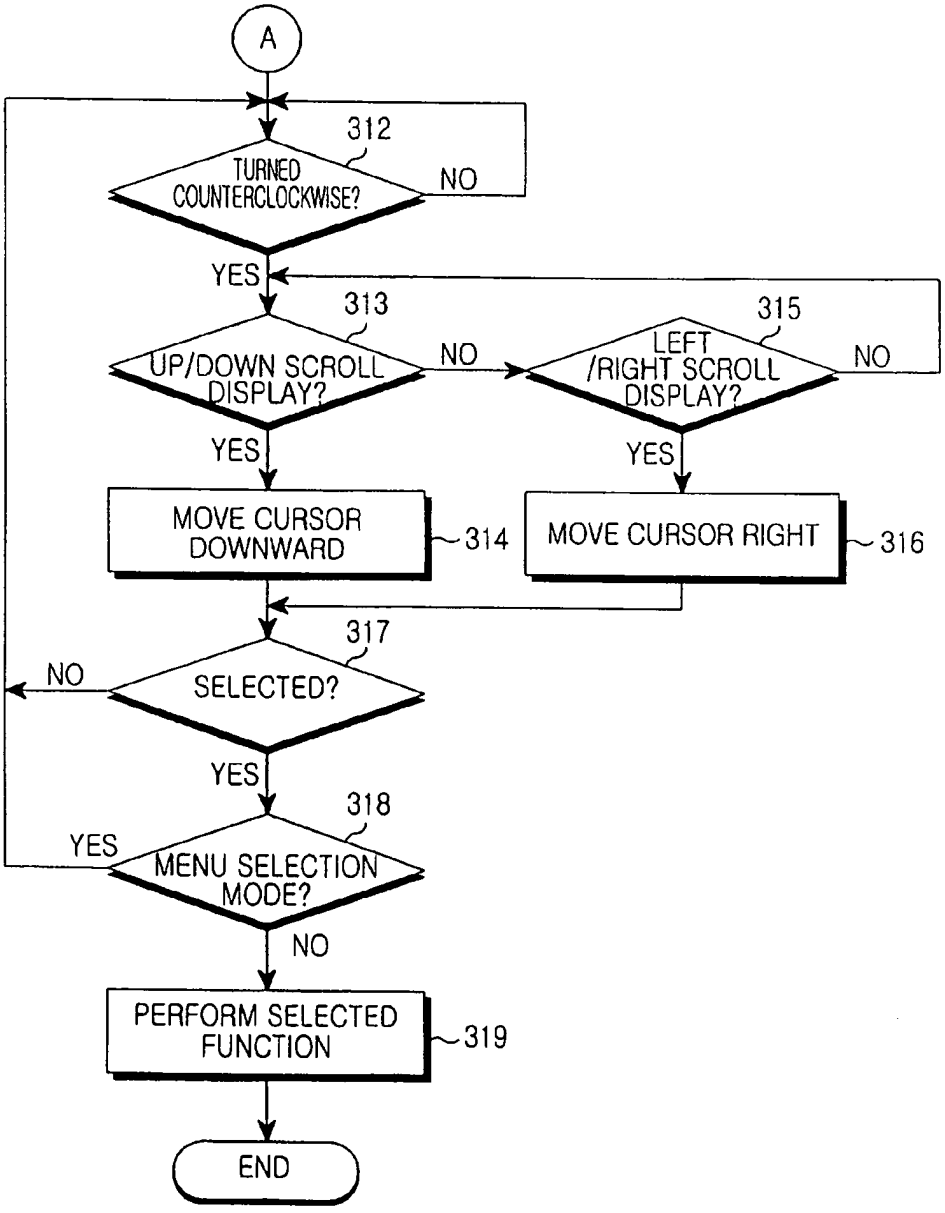
A
312
TURNED COUNTERCLOCKWISE?
NO
YES
313
UP/DOWN SCROLL DISPLAY?
NO
315
LEFT /RIGHT SCROLL DISPLAY?
NO
YES
YES
MOVE CURSOR DOWNWARD
314
MOVE CURSOR RIGHT
316
317
NO
SELECTED?
YES
318
YES
MENU SELECTION MODE?
NO
PERFORM SELECTED FUNCTION
319
END

FIG.4

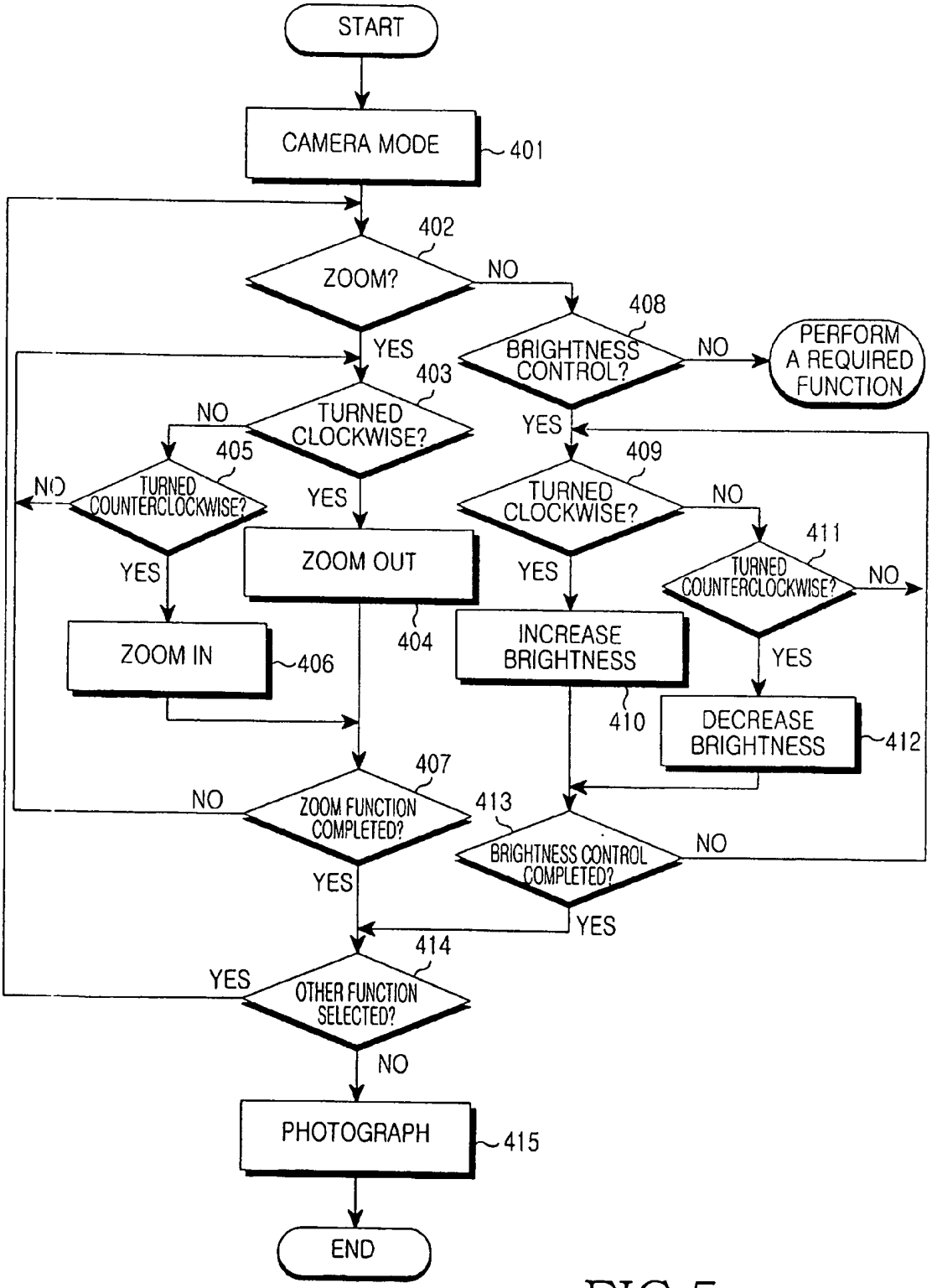
START
CAMERA MODE
401
402
ZOOM?
NO
408
BRIGHTNESS CONTROL?
NO
PERFORM A REQUIRED FUNCTION
YES
403
TURNED CLOCKWISE?
NO
YES
405
TURNED COUNTERCLOCKWISE?
NO
YES
ZOOM OUT
404
ZOOM IN
406
409
TURNED CLOCKWISE?
NO
YES
411
TURNED COUNTERCLOCKWISE?
NO
YES
INCREASE BRIGHTNESS
410
DECREASE BRIGHTNESS
412
407
ZOOM FUNCTION COMPLETED?
NO
YES
413
BRIGHTNESS CONTROL COMPLETED?
NO
YES
414
OTHER FUNCTION SELECTED?
YES
NO
PHOTOGRAPH
415
END

FIG.5

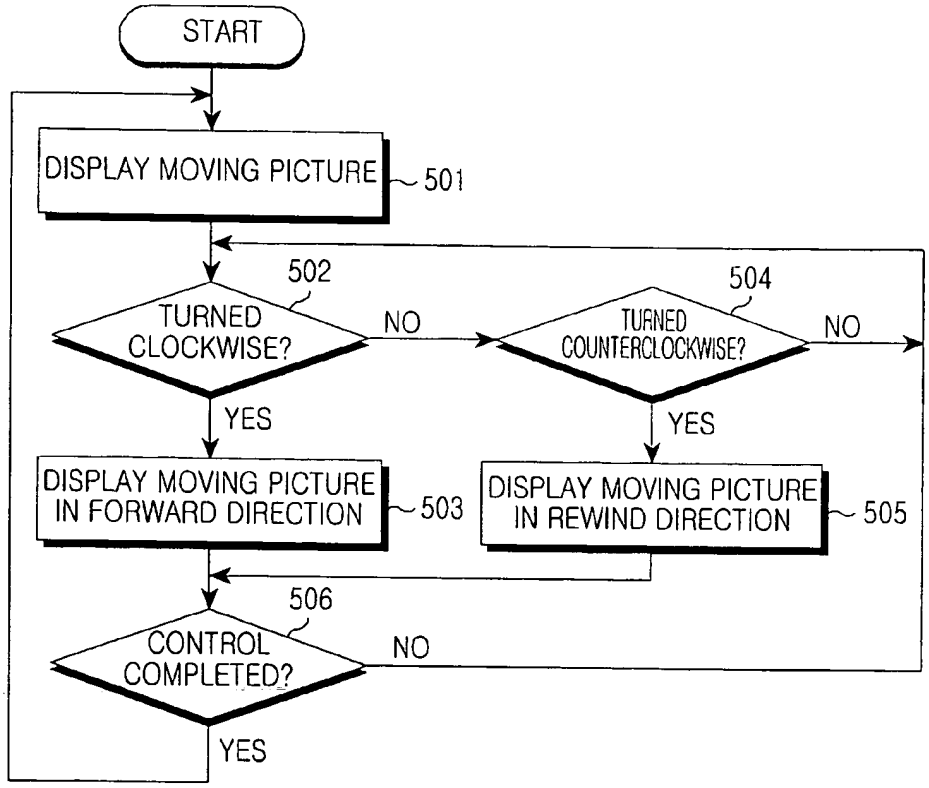
START
DISPLAY MOVING PICTURE
501
502
TURNED CLOCKWISE?
NO
504
TURNED COUNTERCLOCKWISE?
NO
YES
YES
DISPLAY MOVING PICTURE IN FORWARD DIRECTION
503
DISPLAY MOVING PICTURE IN REWIND DIRECTION
505
506
CONTROL COMPLETED?
NO
YES

FIG.6